STARTING SYSTEM

Pre-heating system	Light lighting time		
	Supper glow type		See pages ST-3, 4
	Fixed delay type		
	HZJ and HDJ ex. (Europe and Australia)		Approx. 5 seconds
	PZJ, HZJ75, HZB and HDB		
	ex. (Europe and Australia)	12 V type	Approx. 6 seconds
		24 V type	Approx. 5 seconds
	Water temp. sensor resistance		
		at – 20°C (– 4°F)	10 – 20 kΩ
		at 0°C (32°F)	4 – 7 kΩ
		at 20°C (68°F)	2 – 3 kΩ
		at 40°C (104°F)	0.9 – 1.3 kΩ
		at 60°C (140°F)	0.4 – 0.7 kΩ
		at 80°C (176°F)	0.2 – 0.4 kΩ
Starter	Rated voltage and output power		12 V 2.5 kW, 24 V 4.5 kW
	No-load characteristic		
	Current	12 V type	180 A or less at 11.0 V
		24 V type	90 A or less at 23.0 V
	rpm		3,500 rpm or more
	Commutator Outer diameter	STD	36.0 mm 1.417 in.
		Limit	35.0 mm 1.378 in.
	Undercut depth	STD	0.7 – 0.9 mm 0.028 – 0.035 in
		Limit	0.2 mm 0.008 in.
	Circle runout	Limit	0.05 mm 0.0020 in.
	Brush Length	STD	20.5 – 21.0 mm 0.807 – 0.827 in.
		Limit	13.0 mm 0.512 in.
	Spring installed load		3.2 – 4.0 kg (7.1 – 8.8 lb, 31 – 39 N)

CHARGING SYSTEM

Drive belt deflection and tension			See page A-2
Battery specific gravity	when fully charge at 20°C (68°F)		
	95D31R and 95D31L		1.25 – 1.27
	ex. (95D31R and 95D31L)		1.27 – 1.29
Alternator	Rated output		12 V 45 A, 12 V 55 A, 12 V 60 A, 12 V 80 A, 12 V 100 A, 24 V 30A, 24 V 55 A
	Rotor coil resistance	12 V type	2.7 – 3.1 Ω
		24 V type	1.0 – 1.4 Ω
	Slip ring diameter	STD	14.2 – 14.4 mm 0.559 – 0.567 in.
		Limit	12.8 mm 0.504 in.
	Brush exposed length	STD	10.5 mm 0.413 in.
		Limit	1.5 mm 0.059 in.
Alternator regulator	Regulating voltage		
	12 V type	at 25°C (77°F)	14.0 – 15.0 V
		at 115°C (239°F)	13.5 – 14.3 V
	24 V type	at 25°C (77°F)	27.7 – 28.7 V
		at 115°C (239°F)	26.0 – 28.7 V